CONNECTICUT INDUSTRY

OCTOBER NUMBER

1928

PUBLISHED BY
THE MANUFACTURERS ASSOCIATION
OF CONNECTICUT, INC.

Hadfield, Rothwell and Soule

Certified Public Accountants

take pleasure in announcing the

appointment of

Mr. Frederick A. Warburton

as Resident Manager of their

Bridgeport Office

effective September the first

Hartford-Connecticut
Trust Building
Hartford, Connecticut

First National Bank
Building
Bridgeport, Connecticut

A Word of Explanation to New Friends

THE Manufacturers Association of Connecticut is a voluntary service organization made up of approximately 800 of the representative industries of Connecticut, which in turn employ approximately 225,000 workers and represent invested capital of over $692,000,000.

The Association was incorporated in 1910 and has for its object the advancement of the interest and welfare of its manufacturers and of the State of Connecticut as a whole. It serves its members in all matters in which they have a common or an individual interest. It speaks for them before Congress, at the State Legislature, before the Interstate Commerce Commission, or wherever united representation is required. Through the medium of *Connecticut Industry* and a special bulletin service, it keeps members advised of matters of importance, whether this be in the field of human relations, federal or state taxation, transportation, research, power, national or state legislation, or any one of the hundred other subjects in which the manufacturer of today is keenly interested. Under the direction of its Board of Directors and its committees, composed of industrial leaders who give generously of their time to Association affairs, it is guided in the difficult problems which beset industry at every step and the ultimate and satisfactory solutions of which are so vitally important in a state as highly industrialized as is Connecticut. Over seventy prominent industrialists, each an expert in his field, serve upon these committees, giving the benefit of their wide experience to the membership at large, and in this self-sacrificing interest lies the organization's greatest strength.

It is the aim of the Association to be constructive and progressive and to help make Connecticut the best state in the Union industrially and every other way. In addition to serving its members, the information which it compiles on numerous matters of general public interest is available for the use of the state and for outside research organizations.

To market—to market—Safely, on time and at reasonable cost

Ship by ocean express. The American-Hawaiian fleet of twenty-three motor ships and steamers offers the manufacturer the most frequent and regular service in the intercoastal trade. Your product, regardless of value or bulk, will go to market economically, safely and on scheduled time.

This line, the *Panama Canal Line* — has won for itself a tradition for reliability unparalleled in the Coast-to-Coast trade. Sailings East and West every four days — between Boston, New York, Philadelphia, Charleston and Los Angeles, San Francisco, Portland and Seattle through the Panama Canal.

Modern equipment and rigid operating regulations have won for American-Hawaiian a splendid reputation for skilful handling of high grade merchandise.

Claims are settled fairly and promptly. Ninety-seven percent of those received are disposed of the same month. Let us explain rates and routes to your traffic manager. If you are interested our representative in your city will be glad to help you with your traffic problems.

AMERICAN-HAWAIIAN STEAMSHIP COMPANY

"Coast-to-Coast Since 1855"

CONNECTICUT INDUSTRY

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The Manufacturers Association of Connecticut, Inc.

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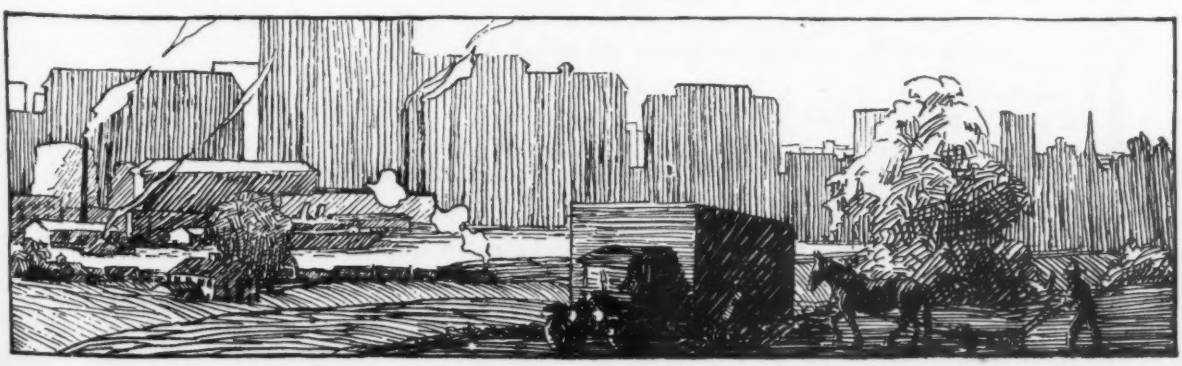
IN THIS NUMBER



Out-Worn Economic Laws

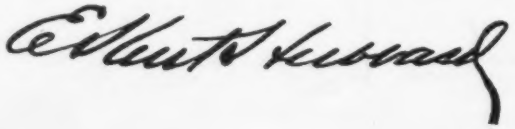
Economic laws developed during one period do not always continue their infallibility into another period. Adam, Smith, Malthus and others dealt primarily with human equations in which there is slight change. Later economists dealt with relations in which the factors do change.

The economists who wrote during the first thirteen years of the present century were confronted with many problems having to do with production and distribution. They consequently developed their own theories and formulated their own laws. This was particularly true in the field of rail transportation, but since that time conditions have changed tremendously. The Panama Canal has been opened. Our inland waterways have been improved. The motor truck has revolutionized freight carriage. The centers of population have shifted and production and sales methods have improved. Therefore these economists who scored the basing of freight rates upon what the traffic will reasonably bear and who advocated the mileage basis must of necessity reverse their opinion.

The Interstate Commerce Commission has in recent decisions shown a tendency toward the placement of rates upon a basis approaching an absolute mileage basis and in doing so has utterly disregarded the consequences of the acceptance of such a basis. To those who care to think of these results the following precept which cannot be violated will be of interest: —

> A transportation agency is an instrument by which goods are rendered cheaper because transported from a place where they are made to advantage. The economic life of the people is advanced and their command of consumable goods is increased, by specialization of producing industries because of excellence of product, by quantity production because of the reduction of unit cost, by centralization of specialized labor because such centralization results in the maximum use of the laborer's potential services and increased return to him, and by the largest use of the transportation plant which results in lower costs to the transportation agency. Any factor or factors which tend to prevent specialization, which makes impossible quantity production, which prevents specialization of labor or which impedes the full use of the transportation plant effectively blocks the continued trend toward lower priced consumers' goods by encouraging the multiple development of the centralized producing areas.

It may be heresy to say that economic laws are subject to repeal but it cannot be contended that all of the so-called laws developed by economists of the past can withstand all changing conditions.



Rayon—the Miracle Textile

By E. L. Milliken,

The Belamose Corporation, Rocky Hill, Connecticut

The establishment in Connecticut, several years ago, of a rayon manufacturing plant, was watched with very considerable interest by industrialists here and elsewhere. Developments at the Belamose plant bear witness to the desirability of Connecticut as a field for such enterprises and to the success of the rayon research and manufacturing that has developed a permanent product of beauty and utility, allying itself closely with the other textiles. This latter point is well brought out by Mr. Milliken.

THE romance of rayon — the Miracle of Rayon — has its inception deep in the truly awe-inspiring, innermost and primary reactions which the Master Chemist carries on in that vast laboratory known as Nature.

Rayon has its beginning in the water vapor of the clouds and in the carbon dioxide of the air which eventually combining within the living plants produce amongst other things cellulose of which the fibrous portions of plant growths is largely constituted. These cellulosic fibres from wood or the cotton plant constitute the bases used in manufacturing rayon.

The chemistry of cellulose in its formation during plant life is far from being thoroughly understood, yet our knowledge to date leads one to marvel further at the eternal fitness and balance of things in Nature. Water is drawn up from the ground by capillary action through the circulatory system of the trees and plants and combines therein with carbon dioxide from the air absorbed by the green leaves during the hours of sunlight, through the intricate and fascinating agency of photo-synthesis. Carbonic acid gas is formed, oxygen is released, light absorbed and sugars and starches appear. The nicety of the process as so far revealed by research is such that it arouses to the utmost the imagination and wonder of "him who in the love of nature holds communion with her unseen spirits."

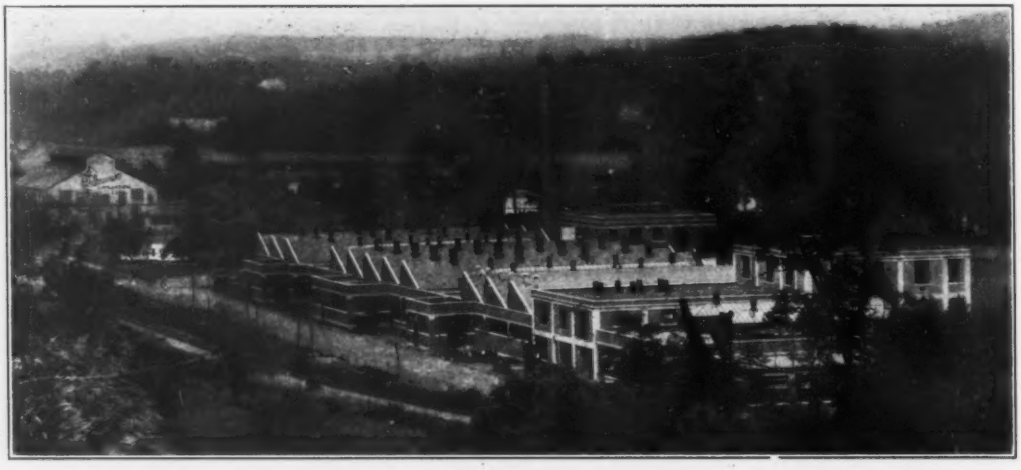
The formation of cellulose from glucose, one of the sugars formed within a plant, is a reaction or reactions lying within that vale of chemistry which has yet to be finally explored. We do know that the hydrolysis of cellulose by different means produces glucose and the assumption is, that from glucose by a reversal of the process but through a series of complex chemical reactions, we obtain cellulose. As in so many industries dependent upon intimate knowledge of physics and chemistry, the cellulose industry knows more of the physical manifestations and attributes of cellulose and its reactions chemically with the various other chemical compounds than is actually known of its own chemical composition. We can here do no more than suggest this interesting line of study leading up to the point where cellulose is formed in plant life and made available for its various uses throughout the industry. Before leaving the subject, however, it is submitted that the importance of cellulose in common with other commonplace generally accepted things in our everyday lives is sometimes overlooked.

Thus the miracle. Not so many months ago a noble spruce was standing in some northern forest drinking in the sunshine through the needles of its lofty top, — today much of the very substance of the tree is being worn as rayon by people in places thousands of miles remote from the forest where grew the tree. The galaxy of color in which it so appears comprehends the full range of the visible spectrum. We may almost say that rayon is transmuted sunshine, it is so lustrous and susceptible to dyeing in an infinite number of shades. Someone has naively defined the word rayon as coming from "Ra" the Egyptian Sun-God and "yon" phonetic spelling of "yarn." While not true, yet rayon might well be called the "yarn of the Sun-God."

A Cellulose Industry

The rayon industry is one of the great cellulose group which includes paper, cellulose nitrate, cellulose acetates, cellophane, vulcanized fibre and the cellulose ethers.

There is much popular misconception about rayon. It is a vegetable product in contradis-



The Belamose Corporation, Rocky Hill

tinction to silk which is an animal product.

Rayon for a long time was laboring under a handicap by being known as artificial silk. It is not a substitute for silk but a distinct fibre. Instead of being a substitute it is rather an aid to all branches of the textile industry for the embellishment of fabrics through adding color, lustre and contrast. It is today enlivening fabrics in certain textile lines whose conservatism has hitherto caused them to refrain from employing it.

Some idea of the extent to which it has penetrated the world's textile business can be judged from the fact that it is now being woven on the hand looms in the Punjab in India on which for centuries only cotton, wool and silk have been fabricated. Also it is rapidly increasing in use in Egypt. Italian exports to India and Ceylon increased from 1,000,000 lbs. in 1925 to nearly 3,000,000 lbs. in 1926; to China from almost 1,000,000 lbs. in 1925 to over 2,500,000 lbs. in 1926; to Japan from 400,000 lbs. in 1925 to over 1,500,000 lbs. in 1926. This is indeed "carrying synthetic silk to China" from whence first came natural silk. An interesting economic side light here is the statement made not long ago to the effect that if, of the cotton piece goods consumed in India, but one inch in the width of the piece should come to be rayon, not all the present world's rayon manufacturing plants could supply the demand thus stimulated.

Rayon is "Man" Made

Other textile fibres depend either directly or indirectly on plant life and are grown without chemical interference by man. Cotton is very largely composed of cellulose, linen likewise. Wool comes from sheep whose main food is cellulose in nature. Silk, while an animal product, comes from a worm whose food is the cellulose in the leaves of the mulberry tree.

Rayon alone is a man made fibre. In fact it is the only synthetic fibre which man so far has been able to produce in sufficient commercial quantities. In rayon manufacturing, the desirable cellulose fibre in the form of the tree or cotton plant is separated from undesirable celluloses and impurities, put into solution and regenerated into long continuous fibres susceptible of more accurate control as to size and characteristics than is possible in Nature's own processes, marvelous as they are.

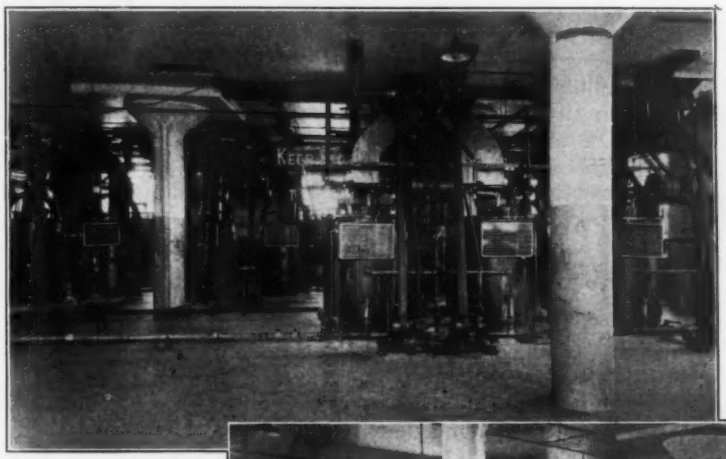
Two Centuries of Development

The processes used today to make rayon have required years of research and development in machinery and processes.

Scientists nearly two centuries ago dreamt of duplicating the expensive and tedious work involved in sericulture as a result of which natural silk is obtained. Reaumur in 1734 recorded certain attempts to duplicate the product of the silk worm. Andeman, a Swiss, in 1855 patented an ether alcohol solution of nitro cellulose which he pulled as a thread on the point of a needle dipped into a coagulating solution. Swan, Swinbourne, Powell and Wayne produced nitro cellulose filaments for electric bulbs.

Count Chardonnet, working on the problem, proved that the silkworm filament was largely cellulose and that the mulberry leaf, upon which the silk worm thrived, was high in cellulose content. In 1889 he first exhibited a fibre made by forcing nitro cellulose solution through a

glass capillary tube into air. This coagulation is similar to the formation of a film when collodion is exposed to air. The threads he thus made were inflammable and it required a denitration process which was eventually developed, before the fibre produced was generally acceptable. In 1891 he started a mill at Besancon in France which was continuously operated until the late war, when it was turned into a gun cotton plant. It is now, however, again producing rayon.



AT THE LEFT — *Mixing the Solutions.* BELOW — *The Sulphuration Process, a Most Important Manufacturing Operation.*

Despeissis in 1890 produced a fibre by dissolving cellulose in an ammoniacal solution of copper hydroxide from which the cellulose was precipitated in a bath of caustic soda. In 1897 Pauly started the manufacture of fibre by the so-called cupra-ammonium process. Cross & Bevan & Beadle in 1892 discovered a less expensive means of making a solution of cellulose which came to be known as viscose. The first application investigated was the making of photographic films, the second the sizing and filling of textiles and thirdly the making of moulded articles from solid cellulose. From this has come the viscose process by which by far the larger portion of the world's rayon is made.

In 1898 Charles H. Stearns, an English manufacturer who operated an electric lamp works in Switzerland and England, received a patent for manufacturing continuous carbon lamp filaments from viscose with ammonium chloride as a setting bath. He had been associated with Edison and Swan and in the course of his research came in contact with Cross & Bevan. Together as the Viscose Spinning Syndicate they established an experimental plant for studying the manufacture of artificial silk at Kew, England. Here, with Topham, was developed the so-called pot spinning method which Courtauld later put into successful commercial operation.

All of these processes, that is nitro-cellulose, cupra-ammonium and viscose, produced a filament of regenerated cellulose.

A fourth process, the cellulose acetate, was an offshoot of Cross & Bevan's investigation. By it filaments of cellulose acetate are produced. Two Swiss Chemists, Henri and Camille Dreyfus perfected this process during the Great War. Cellulose acetate was the dope used on aeroplane wings. Yarn by this process has not yet had the same extensive application as yarn produced by the viscose process on account of difficulties encountered in dyeing. These troubles have now been largely overcome and the cellulose acetate fibre has certain desirable characteristics which commend itself to various lines of textile trades.

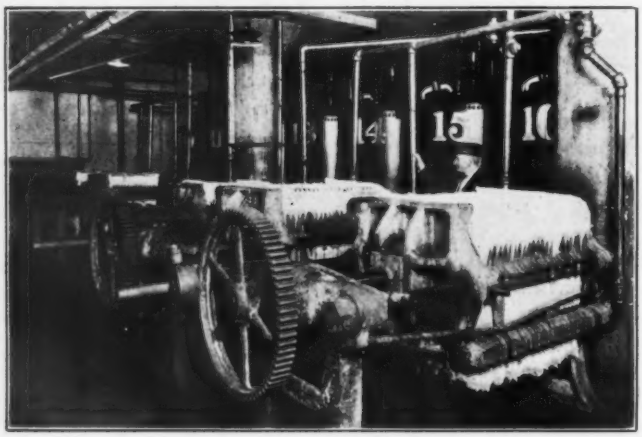
Importance of Uniform Pulp

Rayon is manufactured from either wood pulp or cotton linters or from a combination of both. Wood pulp has been for some years and still remains the principal source of supply of cellulose for the rayon industry, although cotton linters are coming to be used in increasing quantities, particularly in combination with wood pulp. The desirable portion of the wood pulp or linters is the so-called alpha cellulose. Special rayon wood pulp usually runs in alpha about 87% but certain makes can be purchased running as high as 95%. The uniformity must be such that the alpha does not vary more than a fraction of 1% from a specified amount.

To paraphrase Emerson, "rayon yarn is but the lengthening shadow of the original pulp fibre." The utmost measure of accurate control cannot result in uniform rayon yarn if the base, be it either wood pulp, cotton linters or both, is not kept within specified limits as to certain characteristics.

The needs of rayon manufacturers have undoubtedly caused great advance in the art of pulp manufacturing control. The greater need for uniformity of rayon yarns which the future will bring forth means that the manufacturers of pulp bases must rededicate themselves to more positive control and to greater research. This undoubtedly will make for further improvements in the base in the not too distant future. The progress of rayon as well as of pulp manufacture will in the future as in the past be measured by the size of junk piles of the respective industries.

Bearing the foregoing in mind, it is easy to comprehend that other suggested sources of cellulose for rayon manufacture must meet the constantly improved pulp bases now in use. The characteristics of cotton linters naturally vary between seasons and place of growth. The trees from which rayon wood pulp is obtained by virtue of their decades of growth tend to equalize within and between themselves those characteristics upon which depend the uniformity of pulp and the rayon made from it.



The Second "Ripening"

The Viscose Process

The pulp, reduced to a uniform moisture content, is first dipped in an excess of caustic soda. This operation dissolves the impurities and so called hemicelluloses. These and the excess soda are then removed by subjecting the mass to heavy pressure. The remaining mass is then pulverized or ground to a white flake-like form. This is known as alkali cellulose which is placed in cans and subjected to an ageing process under uniform temperature and humidity. At the proper time the aged alkali cellulose is put into revolving drums where an excess of carbon bisulphide is added. This produces orange colored crumbs of cellulose xanthate, the latter complex compound being soluble in water. The process up to this point has been directed to producing a cellulose compound that is so soluble.

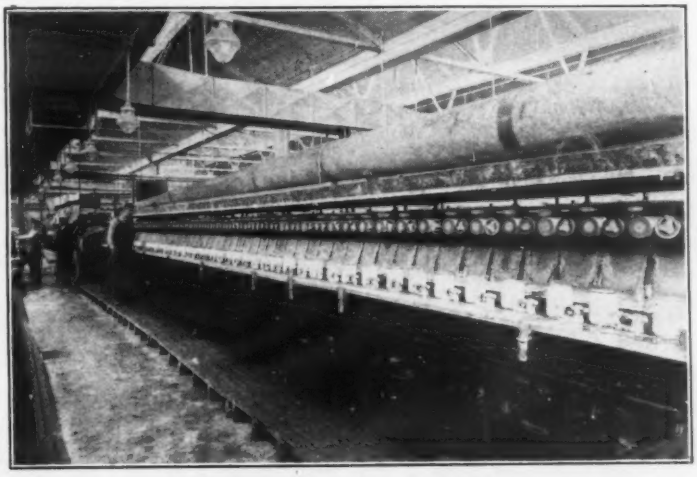
The cellulose xanthate is eventually dumped into mixers or agitators where it goes into solution in water containing a small percentage of caustic soda which latter not only facilitates the dissolution but assists in controlling the second ageing. After proper solution is obtained, the resultant "*viscose*" is filtered and undergoes a second ageing in large iron tanks. Viscose has the general appearance of light tan shoe polish cleaner.

From the second ageing the viscose at the proper time is sent by compressed air to the spin or precipitation room.

The precipitation machine has any given number of spindles. The viscose is picked up by a very accurate metering pump which delivers to a jet a definite amount of viscose per unit of time.

The jet is made of alloys of different precious metals and it has holes corresponding in number with the filaments desired in the finished yarn. The jet is immersed in an acid solution. The vis-

cose being an alkaline solution, a precipitation takes place as it oozes from the holes in the jet. At this time the original alpha cellulose in the pulp is "regenerated" in the form of continuous filaments. The thread thus formed is wound on bobbins or inside of pots according to whether the bobbin or pot system is used.



Spinning or Precipitating the Cellulose

Pot or Box Spinning

In the pot system the yarn is twisted as it is spun; in the bobbin system the fibres are all parallel as spun.

The twisted wet yarn from the pots is reeled, then desulphered, washed and the skein dried under tension. The drying under tension gives a lustre to the yarn, being akin to the mercerizing of cotton when so dried after being treated with caustic soda solution. The yarn is then bleached and after being dried and humidified, is inspected and graded. It is then packed in 10 pound bales, of which from twenty to twenty-four are packed in a case for shipment.

Bobbin Spinning

In the bobbin system the wet yarn on perforated bobbins is washed and then dried. This drying produces the lustre. It is then twisted and reeled into skeins dry. The skeins are then desulphered, bleached and washed. The water is removed in a whizzer and the skeins finally passed through an automatic dryer and humidifier. Inspection, grading and packing follow as in the pot system.

Artificial straw and horsehair are made by much the same process, the jets used being special for each type of fibre.

Twisting

A Highly Technical Process

The process is highly technical in nature, involving as many as three hundred controls

Reeling

from pulp to yarn. It requires special types of rooms resulting in expensive buildings, special machinery, close and unceasing control of temperature and other physical and also chemical factors and intensive supervision. The necessary seven day operation in the chemical end, twenty-four hours daily, results in an exacting regime for all those engaged in the fabrication of the fibre. Most unexpected and disastrous conditions can arise seemingly from nowhere to embarrass and perplex even those who have had long experience in handling such problems. Every branch of engineering finds some application in the process.

Inspecting the Yarn

Even after the yarn has been produced the manipulation in the textile end of the plant is far from simple. It handles unlike any other fibre be it cotton, wool, linen or even raw silk.

Technical experience as well as skill, combined with sufficient capital are essential for success. The rayon corporations in this country producing today on any reasonable scale can almost be counted on the fingers of one hand. Others have come and gone and will come and go for lack of one or both of these necessary requirements.

General Characteristics

Rayon has a specific gravity about 20% greater than silk, both figures at normal moisture content. Thus a garment of rayon made of yarn of equivalent cross section will be heavier than one of silk.

In strength rayon today runs from 60% to 80% of that of natural silk. It loses much

of its strength when wet, but it regains this strength again upon becoming dry. This fact, however, should not give cause for undue apprehension. Any fabric composed of no matter what fibre, will be ruined in laundering if mistreated and that can take place in the home, just as well as in the modern laundry.

It is to be remembered that during its manufacture rayon is washed when in a condition most sensitive to damage. Particularly as it comes from the precipitation machine it is weak — only a short time before it was a viscous liquid — but it can be and it is washed in this state without damage. Again after twisting and reeling it is successfully washed and bleached in skeins. Later if it is to be colored it suffers liquid immersion again in dye vats.

When fabricated it is much better able to withstand wetting without damage than when in skein form. Frequently more twist is imparted to the yarn during manufacture, which decreases its susceptibility to abrasion or breakage. After being knitted or woven it is able to withstand laundering if accorded the respect due to any delicate and fine fabric. As a matter of fact proper washing and ironing improves its appearance without detracting unduly from its strength.

That the foregoing statements are not mere conjecture is borne out by a recently compiled estimate that rayon accounted for 25% of the value of wash goods sold by retail stores in 1927.

Rayon has a relatively high elongation which usually runs from 20% to 25% of its original strength before breaking.

Contrary to some false reports, rayon is no more inflammable than cotton. A recent report from the U. S. Bureau of Standards absolves rayon completely in this respect.

A characteristic of rayon commending it for such purposes as lingerie is its hygroscopicity, viz.: its affinity for moisture. This enables it to absorb perspiration and unlike natural silk this perspiration neither rots it nor turns it yellow.

Rayon is the most lustrous of the textile fibres and as such is much used for decoration and embellishment in combination with other textile fibres. It takes dyes readily (except special forms of rayon made by the acetate process for which special dyes have been developed) and holds the same dyes fast better than does natural silk. Because of this quality rayon undoubtedly has aided and abetted the orgy of color noted in more recent fashions.

Rayon does not readily permit the passage of the ultra-violet or short wave length of light, except to a degree equivalent to that of any other textile fibre, according to a recent report by the Bureau of Standards.

Rayon prices in spite of the enormous demand in recent years have declined. This has had a beneficial effect on stimulating new users of the fibre. Costing about one-quarter as much as raw silk, it has found its way into lines from which silk was debarred by virtue of its higher cost. Yet it is not a competitor of natural silk but rather is being legitimately mixed with natural silk to obtain effects not otherwise possible. Likewise the cotton and wool industries are profiting by rayon's special qualifications and new fabrics combining rayon and either of these other fabrics are coming out daily and bidding for public favor. In fact those cotton and wool manufacturers who have grasped the opportunity afforded by rayon are the ones who seem to have operated most successfully during the recent to be regretted depressions in these two great industries.

Uses of Rayon

One naturally asks "where do we find rayon?" Hosiery manufacturers have been for some years among the largest users, as have knit goods manufacturers. The underwear trade is coming along rapidly as a user, in fact certain manufacturers are selling large quantities of underwear and other rayon garments by direct house to house methods. Ever increasing quantities are going into draperies and upholstery and the more recent gains seem to have been in the demands of the cotton and wool trades where rayon's lustre and dyeing qualities add that attraction necessary to satisfy the present craving for brightness and color in all textile fabrics.

It would be a simple task to name at least 25 products in every-day use for men's wear in which rayon is employed; at least 40 such products for women's wear; a great number for house furnishing purposes and many others for theatres, automobiles, etc. Many of the uses to which rayon has been put are well known but there are others on which the general public is little informed. Such for example is the use of rayon for suit stripings and linings, shoe lacings, slippers and pumps, corset cloth, artificial flowers, powder puffs, rubberized raincoats, upholstery and wall covering materials, bath towel embellishments, rugs and carpets, umbrellas, flameproof curtains for theatres and theatrical costumes, auto robes, velvets and so on.

(Continued on page 25)

Courtesy Fairchild Aerial Surveys Inc. and L. & H. Aircraft Corp.

AERIAL VIEW OF THE NORTH AND JUDD MANUFACTURING COMPANY, NEW BRITAIN

The North and Judd Manufacturing Company, organized in 1812, is one of the oldest and best known companies in the country making saddlery, belt and automobile hardware. At the left, under the double smoke stacks are the foundries. Across the street are the main manufacturing units, the power plant, offices, etc., and at the rear of the foundries lies the Traut and Hine Division, purchased in 1925. In the immediate foreground is the company garage. A large new warehouse on the railroad siding does not show in the picture. This is the twentieth of a series of aerial views of member plants appearing in Connecticut Industry

Industrial News Around the State

Makes Dirigible Moorings

The Waterbury Tool Company has received orders for three winches and variable speed gears to be used at St. Hubert Field near Montreal where the trans-Atlantic dirigibles will be anchored. The dirigibles R-100 and R-101 are now being built in England for weekly trans-Atlantic service and the mooring mast is being erected at St. Hubert, the eastern terminal.

The mooring of a great airship to a tower is a delicate operation requiring a system of instantaneous speed controls over the various guy cables used in drawing the airship to the coupling arrangement on top of the tower. The Waterbury Tool Company has already installed winches and gears at the Lakehurst Field, at the Ford airport, at Scott Field, Illinois, and on board the mother-ship Pataco, to which the dirigible Los Angeles is moored at sea.

The mast at St. Hubert will be adequate in size to land both passengers and freight

at the top, to be carried by elevator to the ground.

Lyman Gun Sight Adds Manufacturing Rights

The Lyman Gun Sight Corporation of Middlefield has recently acquired extensive manufacturing rights which make it the largest manufacturer of gun sights in this country. The company has recently purchased the Stevens Company of Chicopee Falls, Massachusetts, and more recently announced the purchase of the gun telescope sight business of the Winchester Repeating Arms Company of New Haven and rights to manufacture the Garand high speed firing mechanism used in Springfield rifles.

An Engineer Robot

The New Haven Railroad is installing new automatic stop signals on the New York to Boston Shore Line route, which represent the last word in safety appliances.

The device is placed on the front of the engine and relays light signals from the right of way to the engine cab. The engineer is required to acknowledge any change in signals within five seconds. If he fails to do so the "robot" in front brings the train to a halt and it cannot be started until the engineer descends and releases a "penalty" device underneath the cab.

The system which is being installed on the Shore Line division is similar to devices already installed on the Hartford division but more complete in its signals to meet emergencies such as track breakage, etc., and will cost nearly $1,000,000.

Connecticut to the South Pole

J. and J. Cash, Inc., of South Norwalk is helping along the Byrd Antarctic expedition by supplying two hundred individual woven name markers for each member of the party. Personal acknowledgment was received from Commander Byrd and South Pole Laundries, Inc., will find their work made easy.

Another Connecticut industry, Veeder-Root, Inc., of Hartford and Bristol has furnished eighteen odometers which will be attached to the dog sleds used by the Byrd party and will register the distance traveled. The odometer itself is a small compact device mounted on a large wooden wheel on the rear of the sled. It is calibrated to tenths of a mile and records nautical miles which are approximately 800 feet longer than the ordinary mile.

The Veeder-Root Company had only three days in which to make up this special order and to produce accurate instruments on an entirely new scale.

Twelve complete sets will be attached to the sleds and the expedition will carry six spare odometers in case of damage to the others.

Veeder-Root Odometer Installed on a Dog-sled Wheel for Use by the Byrd Expedition

On board the *City of New York,* Commander Byrd's base ship, now well on its way, is radio equipment made by the Waterbury Battery Company. It is a battery which can be operated at from 20 degrees to 80 degrees below zero, has a capacity of from 75 to 90 ampere hours, is a closed circuit cell and water is the only necessary element that need be added.

"The Waterbury Telecell" as it is known, was demonstrated to government officials last fall by Martin L. Martus, president of the company. In August a letter was received from F. E. Meinholtz, radio consultant for the expedition, ordering a battery.

New Textile Industry at Stafford Springs

The Beckwith factory at Stafford Springs has been leased by the M. J. Mack Textile Corporation of New York City. The Mack company converts fabrics for use in lining materials and draperies. Eight automatic broad looms have already been installed and are in operation.

Herbert A. West, formerly of Stafford, has been engaged as manager of the plant.

Reorganization of Montgomery Company

The J. R. Montgomery Company of Windsor Locks is to be re-organized under a plan recently approved by the stockholders. The company will be refinanced and a new corporation formed to take over the assets of the present company.

Rubber Tiles to be Made in Danbury

Supplementing announcement in the September issue of *Connecticut Industry* that a new factory was being erected by the Danbury In-

dustrial Corporation, it is now stated that this will be occupied by the Holstein Rubber Company, makers of rubber tiles for use in public buildings. The Holstein Company will move from Hartford about October 1.

Joseph S. Holstein, the founder, is treasurer of the company and A. Kusnith is president and western sales manager. Mr. Holstein's two sons are associated with the company, N. L. Holstein as manager and assistant treasurer and J. M. Holstein as traffic manager. R. J. Marks, Jr., is secretary, Maxwell Stang eastern sales manager and R. R. Kusnith in charge of Canadian sales.

American Brass Opens Old Mill

The American Brass Company has opened what is known as the " west rod mill " at Ansonia, closed when a new mill was put in operation several years ago. Present orders necessitate the opening of the old mill to supplement present facilities.

Beardsley and Wolcott Acquire Berbecker and Rowland

On September 10, stockholders of the Beardsley and Wolcott Manufacturing Company ratified the proposed purchase of the Ber-Becker and Rowland Manufacturing Company of Waterbury. Negotiations have been in progress for some time.

The Beardsley and Wolcott Manufacturing Company was organized early this year through the consolidation of the Beardsley Manufacturing Company of Waterbury and the Frank E. Wolcott Manufacturing Company of Hartford. Its capitalization was $1,000,000. The Berbecker and Rowland Manufacturing Company makes cabinet, drapery and upholstery hardware.

Ingraham Company Enlarges

The E. Ingraham Company of Bristol, clock and watch manufacturers, have let contracts for the erection of a finished goods warehouse of mill construction, 160 feet long by 50 feet wide, five stories in height. The third floor will be level with the platforms of cars set on the company's siding, so that all outgoing freight may be loaded directly into freight cars and not trucked to the freight depot. Outgoing truck shipments will be made from the first floor and trucks will be housed there also.

In addition to the storehouse the company is building a new coal trestle.

Every year since 1919, with the exception of 1921 and 1923, the Ingraham Company has built one or more additions to its plant.

Elections at Cushman Chuck

At the recent annual meeting of the board of Directors of the Cushman Chuck Company of Hartford, Harry E. Sloan, formerly vice-president, was elected president to succeed Adrian P. Sloan. The latter was re-elected treasurer of the company and named chairman of the board. A. Boyd Sloan was re-elected secretary and assistant treasurer.

French Manufacturing Company Builds Addition

The French Manufacturing Company of Waterbury is to erect a one story addition to its plant to take care of increased production. The new building will be 60 feet wide by 200 feet long.

Tobler Heads Winchester

W. A. Tobler, formerly vice-president and general manager of the Winchester Repeating Arms Company of New Haven, has been elected to the presidency of that company, succeeding Frank G. Drew who has become chairman of the board.

Advancements at Hartford Rubber Works

Earle L. Bryant, factory manager of the Hartford Rubber Works has been made manager of both the Detroit and Hartford factories, with headquarters at Detroit. L. B. Martin, formerly production superintendent at the Hartford plant has been made superintendent.

Exhibit at Tulsa

The Pratt & Whitney Company of Hartford will exhibit at the International Petroleum Exposition and Congress in Tulsa, Oklahoma, October 20-29. S. B. Terry, assistant manager of the gauge division will be in charge of the company exhibit which will include rod, casing and tubing gauges, working gauges and bench plugs and precision gauges.

Manning, Maxwell & Moore Purchase

The entire manufacturing and selling business of the American Schaeffer and Budenberg Corporation of Brooklyn has been purchased by Manning, Maxwell and Moore, Inc., with factories at Bridgeport. The business will be merged with that of Consolidated Ashcroft Hancock Company, Inc., an operating company owned by Manning, Maxwell & Moore and the line of gauges, safety valves, thermometers, and recording instruments of the Schaeffer and Budenberg Corporation will be added to the present line of Ashcroft gauges, Consolidated safety valves, Hancock valves, inspirators, etc.

(Continued on page 23)

Business and the College

By President James L. McConoughy,
Wesleyan University

TWO of the most distinctive contributions of America to civilization are American industry and the American college. Each is unique, not to be found duplicated in any other part of the world. Until very recently these two typical American products had very little to do with one another. The college too often held itself aloof from business and industry. The leaders in business and industry were seldom college trained men. Each seemed self-sufficient.

Today this has been strikingly changed. The college realizes that a majority of its graduates are going into business and industrial careers. The sons of the leaders in the American world of business and industry are coming to college, as they did not a few decades ago. Recently, — unfairly I think,— some of New England's miscalled industrial backwardness has been laid at the doors of our New England colleges.

President McConoughy

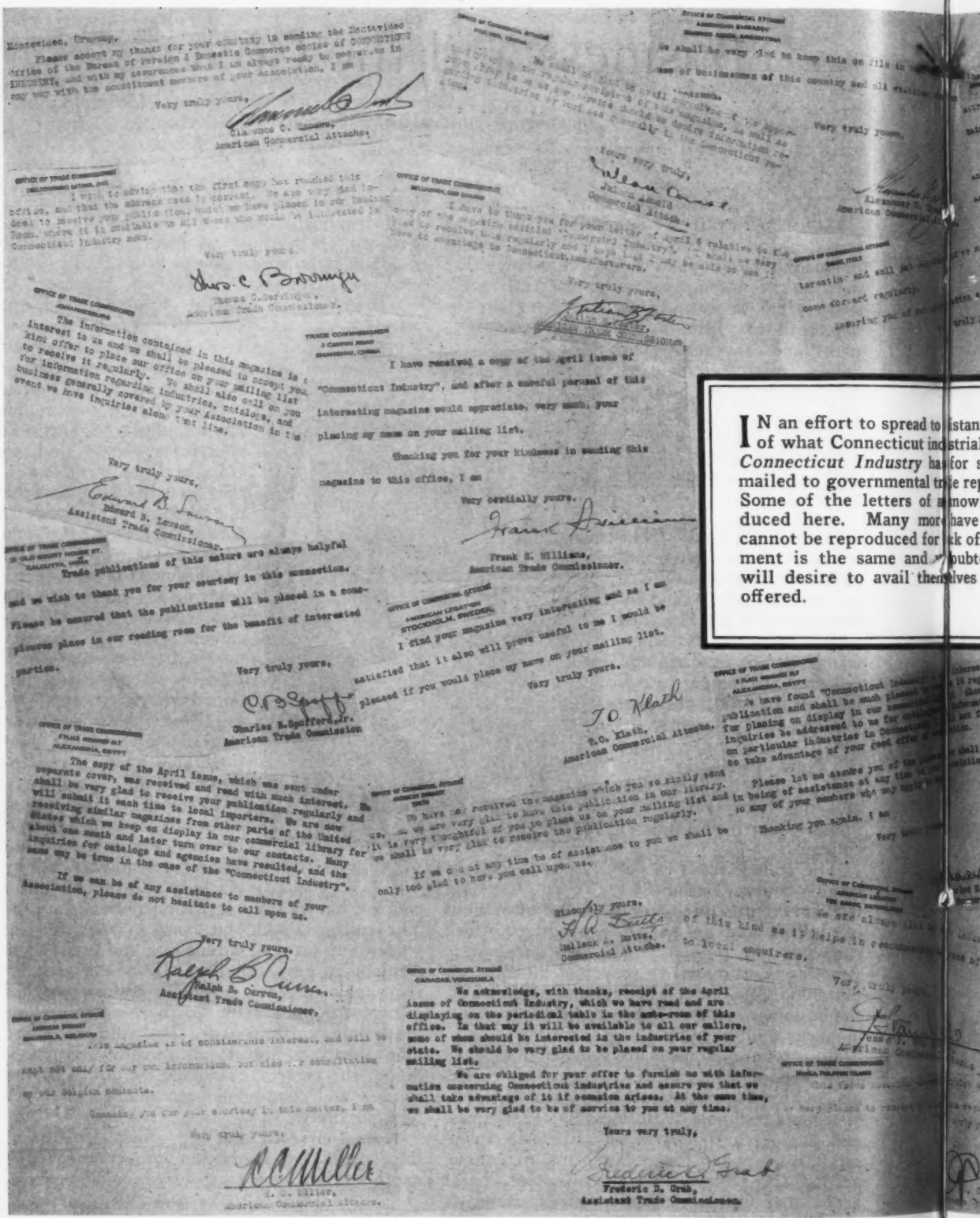
The college itself is becoming a great business or industry, representing an investment of millions of dollars and an annual expenditure which runs into the millions. Higher education in America is estimated to represent in all a $2,-000,000,000 annual expenditure. Naturally, the business world wishes to know whether this money is well spent.

Business and industry are short-sighted when they demand that colleges change their curricula and become exclusively schools of business. Specialized Schools of Business like Harvard's, and engineering departments like Massachusetts Institute of Technology, are, of course, needed. The New England college of liberal arts can, however, I firmly believe, make its largest contribution to industry and business by being open-minded and cordial to the suggestions of the business leaders, but by still fundamentally continuing to be a college of liberal arts. Ambassador Morrow showed true New England sagacity when he answered a query from a Yale undergraduate, about the best college course to study for preparation for a career in finance, thus: "The best course for you to study in college, if you want to succeed later in business, is the one that you find hardest; the second best, the one which interests you most." Mr. Gifford's recent article, studying the careers of college trained men in the telephone business, shows clearly that the group which worked hardest and attained the most academically in college, had the largest responsibility and the highest salaries in business.

The college can serve as a definite training ground for men who later go into business or industry, not by teaching them technical courses, but by training their habits and ideals. The college should be exact in requiring its students to meet requirements: punctuality, dependability, responsibility. It should insist on reasonable accuracy, training a college boy that in many of life's activities there are only two grades given, 100% or 0. It should encourage him to work on his own initiative without prodding; the recent development of Honors courses and comprehensive examinations does this markedly.

I am convinced that the college world and the world of business and industry need one another; they must try to get a common view-

(Continued on page 28)



Montevideo, Uruguay.

Please accept my thanks for your courtesy in sending the Montevideo office of the Bureau of Foreign & Domestic Commerce copies of CONNECTICUT INDUSTRY, and with my assurances that I am always ready to cooperate in any way with the constituent members of your Association, I am

Very truly yours,

Clarence C. Hamlen,
American Commercial Attache.

I wish to advise that the first copy has reached this office, and that the address used is correct. We are very glad to receive your publication, which we have placed in our reading room, where it is available to all those who would be interested in Connecticut industry news.

Very truly yours,

Thomas C. Barrington,
American Trade Commissioner.

The information contained in this magazine is of interest to us and we shall be pleased to accept your kind offer to place our office on your mailing list to receive it regularly. We shall also call on you for information regarding industries, catalogs, and business generally covered by your Association in the event we have inquiries along that line.

Very truly yours,

Edward B. Lawson,
Assistant Trade Commissioner.

Trade publications of this nature are always helpful and we wish to thank you for your courtesy in this connection. Please be assured that the publications will be placed in a conspicuous place in our reading room for the benefit of interested parties.

Very truly yours,

Charles E. Spafford, Jr.
American Trade Commissioner

The copy of the April issue, which was sent under separate cover, was received and read with much interest. We shall be very glad to receive your publication regularly and will submit it each time to local importers. We are now receiving similar magazines from other parts of the United States which we keep on display in our commercial library for about one month and later turn over to our contacts. Many inquiries for catalogs and agencies have resulted, and the same may be true in the case of the "Connecticut Industry".

If we can be of any assistance to members of your Association, please do not hesitate to call upon us.

Very truly yours,

Ralph B. Curren,
Assistant Trade Commissioner.

[illegible] of considerable interest, and will be kept not only for our own information, but also for consultation by our foreign contacts.

Thanking you for your courtesy in this matter, I am

Very truly yours,

H. D. Miller,
American Commercial Attache.

I have received a copy of the April issue of "Connecticut Industry", and after a careful perusal of this interesting magazine would appreciate, very much, your placing my name on your mailing list.

Thanking you for your kindness in sending this magazine to this office, I am

Very cordially yours,

Frank H. Williams,
American Trade Commissioner.

I find your magazine very interesting and as I am satisfied that it also will prove useful to me I would be pleased if you would place my name on your mailing list.

Very truly yours,

J. O. Klath,
American Commercial Attache.

We have received the magazine which you so kindly send us, and we are very glad to have this publication in our library. It is very thoughtful of you to place us on your mailing list and we shall be very glad to receive the publication regularly.

If we can at any time be of assistance to you we shall be only too glad to have you call upon us.

Sincerely yours,

Malack A. Butts,
Commercial Attache.

We acknowledge, with thanks, receipt of the April issue of Connecticut Industry, which we have read and are displaying on the periodical table in the ante-room of this office. In that way it will be available to all our callers, some of whom should be interested in the industries of your state. We should be very glad to be placed on your regular mailing list.

We are obliged for your offer to furnish us with information concerning Connecticut industries and assure you that we shall take advantage of it if occasion arises. At the same time, we shall be very glad to be of service to you at any time.

Yours very truly,

Frederic E. Grab,
Assistant Trade Commissioner.

We have found "Connecticut Industry" [illegible] publication and shall be much pleased to [illegible] for placing on display in our commercial library. [illegible] inquiries be addressed to us for catalogs [illegible] on particular industries in Connecticut [illegible] do take advantage of your good offer [illegible]

Please let me assure you of the pleasure [illegible] in being of assistance at any time to you [illegible] to any of your members who may apply [illegible]

Thanking you again, I am

Very truly yours,

[illegible] of this kind as it helps in [illegible] to local enquirers.

Very truly yours,

James F. [illegible]
American Consul

IN an effort to spread to [illegible] of what Connecticut industrial *Connecticut Industry* has for s mailed to governmental trade rep Some of the letters of acknow duced here. Many more have cannot be reproduced for lack of ment is the same and no doubt will desire to avail themselves offered.

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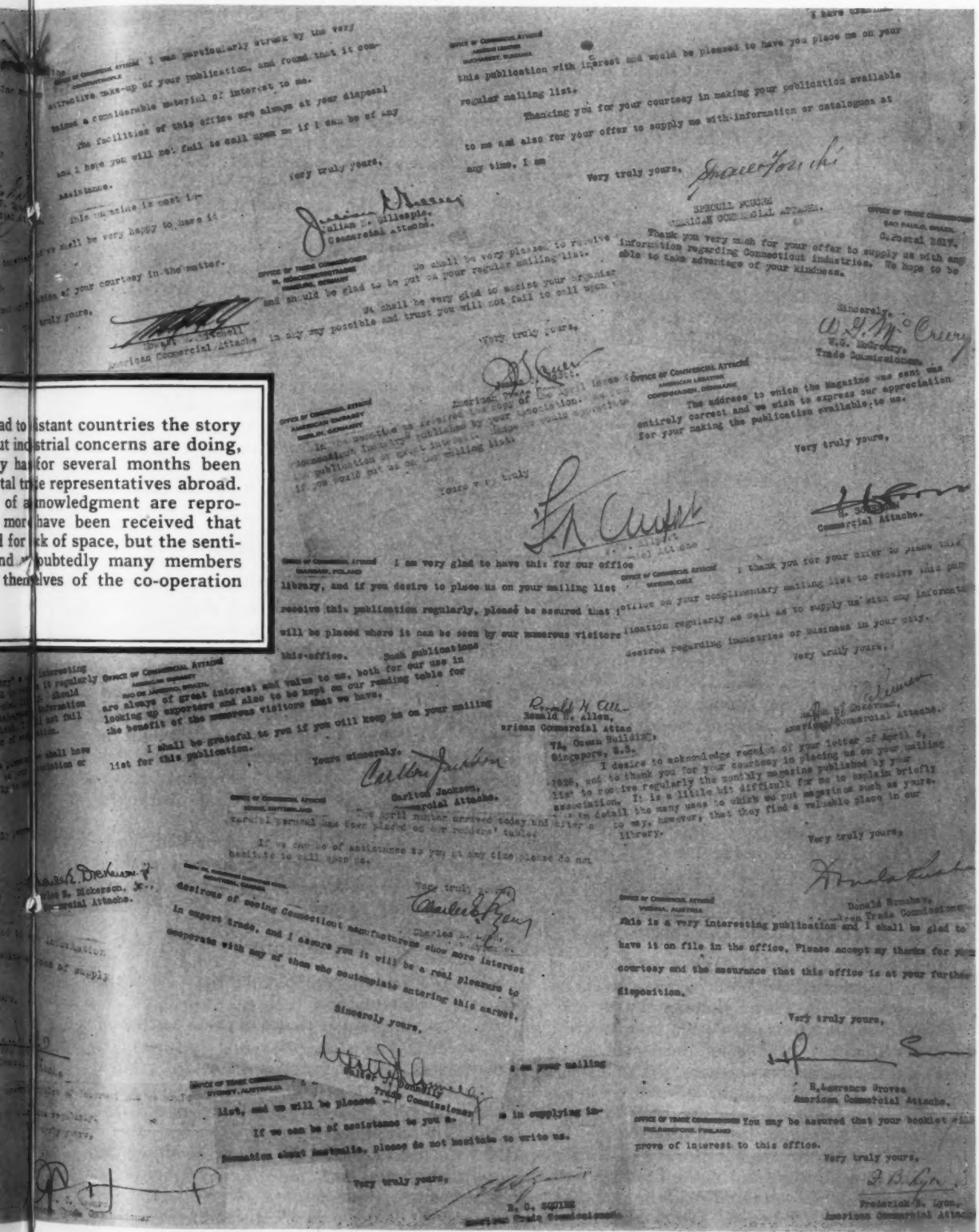


Now or ?

Boston, through its City Council, has just granted an appropriation of $125,000 for preliminary improvements in the Boston airport. Connecticut would do well to think this over and to do some fast thinking at that.

Just Handy

Some modern salesmanship, says Thompson and Lichtner Company in *The Merry Thinker* is exemplified in this story: One morning after a heavy rain, Mose, comfortably ensconced in an arm chair, sat fishing in a puddle in his backyard. Along came the colonel.

"Mose, you old fool, don't you know there are no fish in that puddle?"

"Yes, sah," said Mose.

"Then why are you trying to fish there?"

"Well, you see," replied Mose, "this place is so handy."

New Members

Since the last listing in *Connecticut Industry* the following new members have joined the Association: Connecticut Braided Cordage Company, Norwich; Case Board Company, Andover; Knothe Brothers, Inc., Westbrook; Bristol Brass Corporation, Bristol; Hershey Metal Products Company, Derby; Gillette-Vibber Company, New London; Onondaga Textile Mills, Inc., New London; Welker-Hoops Manufacturing Company, Middletown; Sterling Fibreboard Company, South Coventry; and the Hartford Steel Ball Company, Hartford.

Cotton Men to Meet

The annual meeting of the National Association of Cotton Manufacturers will be held in Boston, October 24 and 25, at the Copley Plaza Hotel.

Foreign Trade Conference

On October 24 the Manufacturers' Association of Connecticut will hold a Foreign Trade Conference at the Hotel Bond, Hartford, for the purpose of arousing a greater interest in the development of foreign business on the part of Connecticut industries. The general session at 9 A. M. will be opened by President E. Kent Hubbard and Governor Trumbull will extend a welcome to the delegates. Dr. Julius Klein, director of the Bureau of Foreign and Domestic Commerce of the United States Department of Commerce, will be the chief speaker, his subject being "Great Possibilities of the Foreign Market for Connecticut Made Goods."

At 10:30 A. M. those in attendance will be divided into five regional conference groups at which representatives of the Department of Commerce will discuss with the manufacturers specific matters pertaining to various regions.

Luncheon will be served at 12:30 P. M., the addresses to be broadcast over WTIC, through the courtesy of the Travelers Insurance Company.

The afternoon will be devoted to commodity conferences with the heads of various divisions of the Department of Commerce in attendance for personal consultation.

A Pressing Matter

A Scotchman, evidently a newcomer, was discovered wandering around Detroit with a pair of rumpled trousers over his arm.

"Can I help you in any way?" asked a kindly citizen.

"Mon," replied the Scot, "I'm looking for the Detroit Free Press."

The Age of Reason

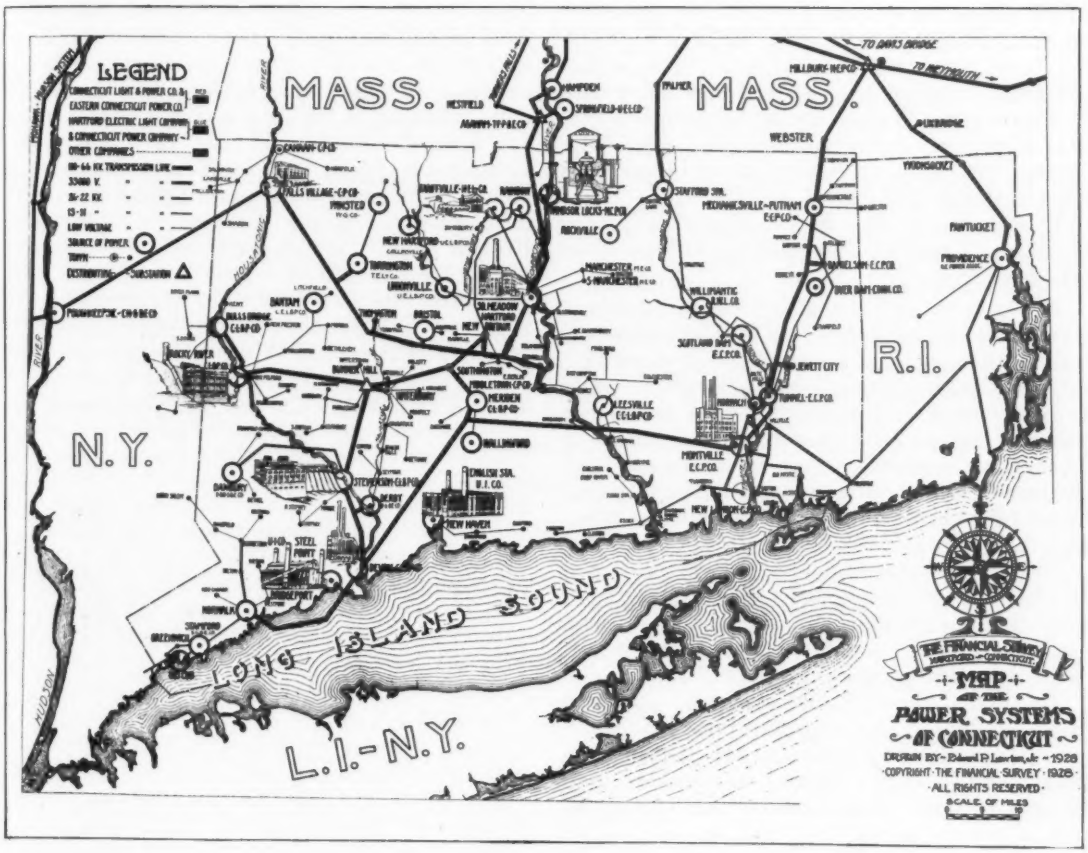
Business Chemistry tells the story that Benjamin Franklin, on board a boat between New York and Boston in the days when it took three days to make the trip, found himself drawn by the smell of fish cooking over a galley fire. Up to that time Franklin had been a strict vegetarian but "the flesh hankers after the fish pots." With business-like care and thought he surveyed the situation. The fish, he found, contained within them other fish. Obviously, therefore, they deserved no mercy and overboard went the vegetarian theory.

"So convenient it is," he remarked later, "to be a *reasonable* creature since it enables one to find or make a reason for everything one has a mind to do!"

The Painter

I am painting now the picture that I'll some day want to see,
I am filling in a canvas that will come back soon to me.
An' though nothing great is on it, an' though nothing there is fine,
I shall want to look it over when I'm old, an' call it mine.
An' I do not dare to leave it, while the paint is warm and wet,
With a single thing upon it that I'll later on regret.

Edgar Guest.



The Coming of Superpower

By PAYSON JONES

Editor, The Financial Survey

The Financial Survey, a new quarterly, made its initial appearance this month. It is a pleasure to present a brief article by Mr. Jones, prepared for Connecticut Industry.

CONNECTICUT industry now enjoys the benefits of central station power production and interconnection as never before, with the hydro-electric development of the Housatonic, Farmington, Connecticut, Shetucket and Quinebaug Rivers reaching a new peak and with the development of a high-tension transmission system interconnecting these powers with one another, with the steam centers at Hartford, Devon and Montville and with consumers throughout the state. Generating and transmission facilities have very largely developed since the outbreak of the World War, although the inception of the superpower idea dates from an early period. A Connecticut company — Hartford Electric Light — built the first "long distance" high tension transmission line in the world in its Rainbow-Pearl Street interconnection, it will be remembered.

The immensity of the building program which has brought superpower to Connecticut is revealed in the growth of property investment as reported by the utilities. In 1913, just prior to the World War, the fixed assets

of all Connecticut's electric utilities amounted to $20,520,000, whereas on January 1, 1928, the total came to $111,982,000. This represents the creation of a new source of wealth in Connecticut just as surely as though a rich vein of mineral deposits were newly opened up. Power, the prime raw material of industry, is most certainly a form of wealth.

In the current issue of *The Financial Survey* Governor Trumbull comments as follows upon this development:

"Ten years ago the electric utilities of this state produced a total of 386,000,000 kilowatt-hours. This year it is estimated that production for the first time will exceed 1,000,000,000 kilowatt-hours. This abundance of power for industry implies a far-reaching development of Connecticut's natural power resources and is of the utmost importance to a state whose manufacturing industries must compete with industries located in much closer proximity to market and raw materials. That there have been men of vision to plan and effect this development with the help of many thousand investors who have financed the several undertakings, is certainly a matter for congratulation."

The distribution of central station power is of no less importance than its manufacture and quite obviously the building of the transmission system shown in the Survey superpower map on page 19 was indispensable to the delivery of such a power supply to the consumer. The most interesting feature of the power picture, however, is that the post-war development period is only just under way. The utilities are apparently confident of a continuing rise in the demand for power, for at New Haven, Westcott & Mapes is building a new steam station for United Illuminating, on the Housatonic, Connecticut Light & Power is about to cut Rocky River into its system and plans still other developments, on the Connecticut, Hartford Electric Light has recently installed mercury turbine equipment on a commercial scale and Northern Connecticut Power is preparing to augment Connecticut's power supply with a 36,000 KW. plant at Windsor Locks.

The trend toward superpower in Connecticut is clearly shown by the following tabulation of kilowatt-hour production and property investment of all electric utilities in Connecticut during the last twelve years:

Year	K.W.H. Production	Property Investment
1927	963,548,487	$111,982,939
1926	884,084,963	99,687,259
1925	807,407,468	89,740,242
1924	697,170,699	82,630,674
1923	649,645,534	67,363,038
1922	535,692,323	62,565,920
1921	428,814,303	59,634,411
1920	507,631,043	43,685,132
1919	386,476,502	38,494,825
1918	375,068,110	33,810,433
1917	336,576,528	31,899,431
1916	275,586,051	26,705,480

Resignation

The Board of Directors of the Manufacturers Association of Connecticut announce with regret the resignation, effective this month, of Miss Anna B. Sands, Assistant Secretary of the Association. Miss Sands, who has been with the Association since 1919, has, during the past several years and in addition to her other duties, directed the publication of *Connecticut Industry*.

Caribbean Cruise

The Association, in conjunction with the manufacturers associations of the other New England states, will sponsor another Caribbean cruise this winter. Arrangements will be similar to those made for members who so greatly enjoyed and profited by the cruise of last year, and detailed announcements will be mailed to all members shortly.

The sailing date is January 19, the ship, the *Calamares* of the United Fruit Line. The ports of call will include Havana, Cuba, Port Antonio and Kingston, Jamaica, Cristobal, Canal Zone, and Port Limon, Costa Rica. Trips by private train and motor will be made to all points of interest and the utmost in comfort and convenience will be provided throughout the trip.

Passports are not required and during the twenty-two days of the cruise approximately 4,840 nautical miles will be traveled.

Essay Contest

Through its Agricultural Committee, the Association will sponsor an essay contest among the boys and girls of the 4-H Clubs of the state, the purpose being to arouse a greater interest in the interdependence of agriculture and industry among the young people.

Taxation Department

Timely News on Federal and State Tax Matters Will Appear in This Department Each Month, Prepared for the Association by Hadfield, Rothwell & Soule

Validity of State Taxation on Royalties from Patents

In the case of Long v. Rockwood, the Superior Court for the County of Worcester, State of Massachusetts, held that a state cannot, under the provisions of the Federal Constitution, tax royalties for the use of patents issued by the United States.

Mr. Justice McReynolds delivered the opinion of the court as follows:

"These cases present the question whether the State of Massachusetts may tax, as income, royalties received by one of her citizens for the use of patents issued to him by the United States. The supreme judicial court of that state held such an imposition would amount to a tax upon the patent right itself and was prohibited by the Federal Constitution. We agree with that conclusion.

"The Constitution (art. 1, Sec. 8) empowers Congress 'to promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries; . . . ' The first Congress provided for issuance, in the name of the United States, of letters patent granting 'for any term not exceeding fourteen years, the sole and exclusive right and liberty of making, constructing, using and vending to others to be used, the said invention or discovery . . . ' Act April 10, 1790, Sec. 1, chap. 7, 1 Stat. at L. 110.

"Chap. 230, Act July 8, 1870, 16 Stat. at L. 201 (Rev. Stat. Sec. 484, Sec. 40, title 35, U. S. Code) —

"'Sec. 22. And be it further enacted, That every patent shall contain a short title or description of the invention or discovery, correctly indicating its nature and design, and a grant to the patentee, his heirs or assigns, for the term of seventeen years, of the exclusive right to make, use and vend the said invention or discovery throughout the United States and the Territories thereof, . . . '

"Chief Justice Marshall, speaking for the court in Grant v. Raymond, 6 Pet. 220, 241, 242, 8 L. ed. 376, 384, 385, stated the general purpose for which patents issue —

"'To promote the progress of useful arts, is the interest and policy of every enlightened government . . . This subject was among the first which followed the organization of our government. It was taken up by the first Congress . . . The amendatory act of (February 21) 1793 (1 Stat. at L. 318, chap. 11) contains the same language, and it cannot be doubted that the settled purpose of the United States has ever been, and continues to be, to confer on the authors of useful inventions an exclusive right in their inventions for the time mentioned in their patent. It is the reward stipulated for the advantages derived by the public for the exertions of the individual, and is intended as a stimulus to those exertions. The laws which are passed to give effect to this purpose ought, we think, to be construed in the spirit in which they have been made . . . The public yields nothing which it has not agreed to yield; it receives all which it has contracted to receive . . . '

"Kendall v. Winsor, 21 How. 322, 327, 328, 16 L. ed. 165, 167, 168 —

"'It is undeniably true, that the limited and temporary monopoly granted to inventors was never designed for their exclusive profit or advantage; the benefit to the public or community at large was another and doubtless the primary object in granting and securing that monopoly.'

"Bloomer v. McQuewan, 14 How. 539, 549, 14 L. ed. 532, 537 —

"'The franchise which the patent grants, consists altogether in the right to exclude every one from making, using, or vending the thing patented, without the permission of the patentee. This is all he obtains by the patent.'

(See also Paper Bag Patent Case, 210 U. S. 405, 423, 52 L. ed. 1122, 1130, 28 Sup. Ct. Rep. 748; Bauer v. O'Donnell, 229 U. S. 1, 11, 57 L. ed. 1041, 1044, 50 L. R. A. (N. S.) 1185, 33 Sup. Ct. Rep. 616, Ann Cas. 1915A, 150.)

"The power to exclude others granted by the United States to the patentee subserves a definite public purpose — to promote the progress of science and useful arts. The patent is the instrument by which that end is to be accomplished. It affords protection during the specified period in consideration of benefits conferred by the inventor. And the settled doctrine is that such instrumentalities may not be taxed by the states.

"In California v. Pacific R. Co., 127 U. S. 1, 32 L. ed. 150, 2 Inters. Com. Rep. 153, 8 Sup. Ct. Rep. 1073, the state sought to sustain a tax laid upon a franchise granted by the United States; but its power therein was denied. Through Mr. Justice Bradley this court said — 'Recollecting the fundamental principle that the Constitution, laws and treaties of the United States are the supreme law of the land, it seems to us almost absurd to contend that a power given to a person or corporation by the United States may be subjected to taxation by a state.'

"The courts of last resort in Pennsylvania and New York have held that a state may not tax patents granted by the United States. Westinghouse Electric Mfg. Co. v. Com. 151 Pa. 265, 24 Atl. 1107, 1111; People ex rel. Edison Electric Illuminating Co. v. Assessors, 156 N. Y. 417, 42 L. R. A. 290, 51 N. E. 269. And no opinion to the contrary has been cited.

"As United States patents grant only the right to exclude, our conclusion is not in conflict with those cases which sustain the power of the states to exercise control over articles manufactured by patentees, to regulate the assignment of patent rights, and to prevent fraud in connection therewith.

"The challenged judgments are affirmed."

Mr. Justice Holmes:

"These are complaints brought by the respondent against the Commissioner of Corporations and Taxation of Massachusetts for the abatement of income taxes for the years 1921 and 1922. The question raised as stated by the supreme judicial court of the state is whether the commonwealth has the right to tax the income received from royalties for the use of patents issued by the United States. That court held that the commonwealth had no such right under the Constitution of the United States and the commissioner obtained a writ of certiorari from this court.

"The reasoning of the court is simple. If the state 'cannot tax the patent, it cannot tax the royalties received from its use.' The postulate is founded on the casual intimation of Chief Justice Marshall in M'Culloch v. Maryland, 4 Wheat. 316, 432, 4 L. ed. 579, 607, and is said to have been conceded below by the Commissioner. It hardly is conceded here and whether it is or is not if this court should be of opinion that the conclusion urged by the Commissioner can be supported upon broader grounds than he felt at liberty to take, the court is not estopped by his doubts. Why then cannot a state tax a patent by a tax that in no way discriminates against it? Obviously it is not true that patents are instrumentalities of the government. They are used by the patentees for their private advantage alone. If the government uses them it must pay like other people. The use made by the patentee may be not to make and sell the patented article but simply to keep other people from doing so in aid of some collateral interest of his own. National banks really are instrumentalities of the government and directly concern the national credit. Indians are wards of the nation. Interstate commerce is left expressly to the regulation by Congress and the states can intermeddle only by its consent. In this case the advantages expected by the government are mainly the benefits to the public when the patent has expired and secondarily the encouragement of invention. The most that can be said is that a tax is a discouragement so far as it goes and to that extent in its immediate operation runs counter to the government intent. But patents would be valueless to their owner without the organized societies constituted by the states, and the question is why patents should not contribute as other property does to maintaining that without which they would be of little use.

"Most powers conceivably may be exercised beyond the limits allowed by the law. Rights that even seem absolute have these qualifications. But we do not on that account resort to the blunt expedient of taking away altogether the power or the right. The power to tax is said to be the power to destroy. But, to repeat what I just now have had occasion to say in another case, this court, which so often has defeated the attempt to tax in certain ways, can defeat an attempt to discriminate or otherwise to go too far without wholly abolishing the power to tax. The power to fix rates is the power to destroy, but this court while it endeavors to prevent confiscation does not prevent the fixing of rates. Even with regard to patents some laws of a kind that might destroy the use of them within the state have been upheld.

"The fact that the franchise came from a grant by the United States is no more reason for exemption, standing by itself, than is the derivation of the title to a lot of land from the same source. Tucker v. Ferguson, 22 Wall. 527, 22 L. ed. 805. In Baltimore Shipbuilding & Dry Dock Co. v. Baltimore, 195 U. S. 375, 49 L. ed. 242, 25 Sup. Ct. Rep. 50, the land was conveyed subject to a condition that a dry-dock should be built upon it which the United States was to have the right to use free from charge for docking and which was

to revert to the United States on a diversion of the land to any other use or on the dry-dock being unfit for use for six months. Certainly a case in which the United States was much more clearly interested than in an ordinary patent. Yet there it was held that neither the company nor the land was an instrumentality of the United States and that there was nothing to hinder the right of the state to tax."

It appears that claims for refund of State taxes are in order in connection with taxes assessed on income from royalties.

New Tax Regulations

The new Federal Tax Regulations are nearing completion and will probably be known as Regulations 74. The exact date of release has not yet been announced.

INDUSTRIAL NEWS

(Continued from page 14)

Latest "Talking Movies" — A Connecticut Invention

The culmination of twelve years of research and experimentation by Professor William H. Bristol has been reached this month with the production of talking movies at the Bristol plant in Waterbury. The first picture is now being filmed by Gotham Pictures, synchronized to words and music by Professor Bristol's invention, the Bristolphone. Plans are under way for the production of additional films with well-known stars, to be released as rapidly as possible through the Gotham organization.

Connecticut Power Buys Manchester Electric

The Connecticut Power Company has purchased the Manchester Electric Company. The sale, approved by the Public Utilities Commission, involves approximately $440,000.

Waterbury Company Sold

The Waterbury Steel Ball Company has been purchased by the Shatz Manufacturing Company of Poughkeepsie, New York. The Shatz Company is affiliated with the Federal Bearing Company, also of Poughkeepsie and manufactures steel bearings for a number of the large automobile concerns.

The Waterbury Company, which employs about 100 operatives, makes automobile and other steel balls. Its president is H. H. Hemingway, vice president, J. E. Peterson, secretary, Arthur D. Variell and treasurer, Cyrus T. Gray.

Doolittle Company Changes Hands

The E. J. Doolittle Company of Meriden, box manufacturers, whose plant has been operated since the death of Mr. Doolittle by Frederick W. Holcomb of Waterbury, has been sold to John R. Hall of Meriden. Mr. Hall, who now conducts a picture frame and box business will continue to operate both concerns.

New Haven Road Performs Engineering Feat

Without the slightest delay to freight or passenger traffic, construction of a seventy-one foot arch supporting the New Haven and New York main four track railroad line near Pelham has been brought to completion. Removal of the huge embankment which formerly supported the road at that point and the work of construction were so arranged as not only to allow passage of all traffic without delay, but likewise to permit the work of construction to go on unimpeded by the constant passing of heavy freight and passenger traffic.

Over this point, the New Haven road, the gateway to New England, carries total traffic of ninety-three through express trains, seventy-five local commutation trains and four freight trains daily. In the course of a month, approximately a million and a half people, equal to the population of the entire state of Connecticut, are carried over this point to New York City and the Grand Central Station. In the entire period of construction, about 17 months, there were only six days on which it was necessary to divert any of the traffic from any of the tracks.

The building of the bridge was necessitated by the construction of a new roadway to relieve automobile traffic.

She was in Alaska looking over a fox farm. After admiring a beautiful silver specimen, she asked her guide, "Just how many times can the fox be skinned for his fur?"

"Three times, madam," said the guide, gravely. "Any more than that would spoil his temper."

Prison Labor Committee

The first meeting of the committee of the Association, studying the problem of the economics affecting the competition of prison-made goods, in connection with the pending Hawes-Cooper bill, was held at the State Prison, October 3. The committee, a similar committee from the State Chamber of Commerce and the members of the Prison Board, were the guests for luncheon of Colonel Norris G. Osborn and Warden Scott.

The Foundry and the Boy

UNDER the above title, the Manufacturers Association of Meriden has printed an illustrated circular describing foundry practice as it is taught in the Meriden State Trade School. Views are shown of students at work or studying moulding, core making, pattern work, cupola tending, sand blasting and cleaning, factory accounting and shop mathematics.

LEFT: *Students at work in the drafting room.*

The upper photograph on this page, taken from the circular, shows one of the drafting classes where technical education in mechanical drafting, chemistry of metals, geometry and principles of mechanics afford the boys an opportunity for advancement in their work.

Meriden produces large quantities of brass mouldings among its diversified products, for use in electric and bathroom fixtures, candlesticks, book-ends and similar products and training in brass moulding is, therefore, of importance. The lower photograph shows boys learning this trade. In iron moulding the students prepare the sand, form their own moulds, pour the metal and remove and clean the castings. They are taught also, the use of moulding machines to be able to cope with the mass production demands of the modern foundry.

RIGHT: *Boys having practical training in brass moulding.*

"Scores of articles originating in our foundries," says the report, "and produced by Meriden men find a market in every corner of the world. New industries are daily being developed, new machines designed and produced, each machine needing new castings in its construction. This gives increased foundry business and necessitates increasing numbers of foundrymen with a greater quality production. More business means more moulders; more moulders will mean more foremen, more foundry instructors and more leaders. Herein lies an opportunity for the hands and brains of Meriden youth." Copies of the pamphlet may be secured from the Meriden Association.

RAYON — THE MIRACLE TEXTILE

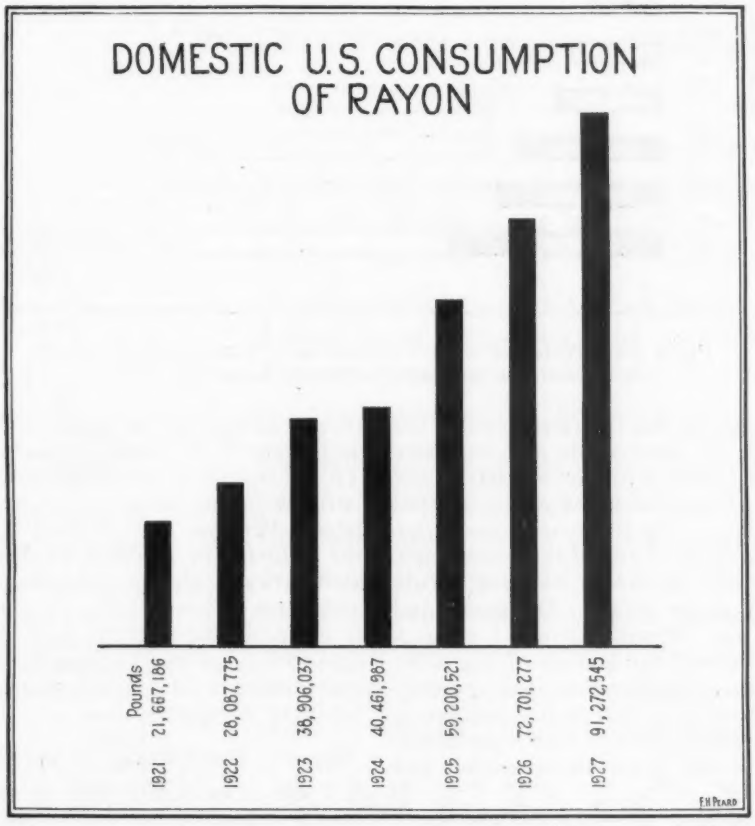
(Continued from page 11)

Output and Consumption

At present the world's rayon output is little more than 2% that of cotton and 5½% that of wool. Just how fast these percentages will increase cannot be accurately estimated. In any event it can not be claimed that rayon is a serious competitor of either wool or cotton, particularly when the two latter find it is a valuable aid for incorporation in their own designs. American cotton mills alone in 1927 used 23 million pounds of rayon. On this and the next page will be found charts showing the output for the past several years, both for the United States and for world production.

We sometimes hear doubt expressed as to whether rayon will continue in popular favor. *The Textile World* stated over two years ago:

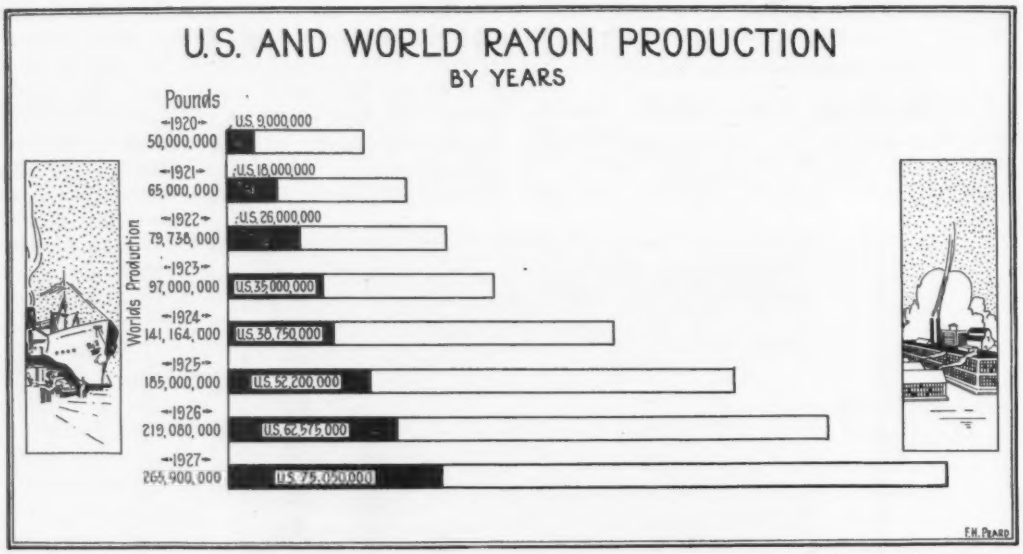
" Rayon is here to stay. It will not replace cotton, wool or silk but it will strengthen its position as one of the major textile fibres. It will always be more valuable as an auxiliary material than as a self-fibre. It is unfair to regard it as a competitor. It has been, and will prove still more to be, an important adjunct. It has done more during the recent textile depression in this country to boost the sales of textiles than has any other single factor. It has enabled the production of attractive novelties at a price within the reach of the average pocketbook. It could have made no greater nor more timely contributions than this to the industry."



(Courtesy Textile World)

The story of rayon fires the imagination. Here is a fibre independent of the moods of Nature, dependent only upon the ingenuity of mankind. Drought, excessive rain, boll weevil, animal diseases, all of these hold no terror for the rayon manufacturer. Is it any wonder, then, that its progress during the last five years has had almost as great a popular appeal as did the famous gold rush of another generation?

The *London Financial News* recently states: " The expansion is a certainty not merely be-



(*Courtesy Textile World*)

United States Production for 1928 is Expected to Reach 95,000,000 Pounds an Increase of Approximately 20,000,000 Pounds over 1927.

cause processes and manufacturing methods are being perfected, but because the use and combination of the article with cotton, wool, and natural silk are being widened and perfected at the same time. To these uses and combinations has lately been added that with linen. This revolutionary discovery touches textile manufacture at every point. Designers and manufacturers are offered a scope for imagination wholly beyond the bounds of the older materials and their combination, and the only balanced view to take is that as the population of the world becomes familiar with these novelties the demand will grow more settled and more insistent."

We hear of a new style era of less lustre and color predicted and that such would seriously affect rayon consumption. Let it come. The lustre of rayon can be and is being dimmed to meet style trend where necessary, but the changed times and ideas of the people must be considered. We have had eight years of the jazz era resulting from the mental reactions produced by the World War. During this time there has been no let up in the craze for color and lustre so far as the masses are concerned. To the contrary, we see more and more colors in dress, in our homes and even in our automobiles. Witness our growing tendency toward the colorful in Kodaks, kitchen cabinets and kitchen ware, electric refrigerators, gas ranges and many other articles of common use. It is inconceivable that we are to revert to the drab colors of the Puritan days. As well expect funerals to become more popular than birthday parties.

Rayon — Handmaiden of the Color Complex

Color is evidently with us to stay. In the Orient where it has been rampant for thousands of years, it has never palled. The Oriental people have the color complex and the Western people are rapidly acquiring it. We are faced with catering to a human nature that by evolution is craving color and lustre and then more color and lustre. This increasing desire for color and lustre, rayon is particularly well adapted to aid and abet.

Middlesex County Meeting

The annual meeting of the Middlesex County Manufacturers Association will be held at the Arrigoni Hotel, Middletown, on October 16. The present officers of the Association are: president E. S. Davis, Rogers and Hubbard Company, Portland; vice-president, R. E. Benner Remington, Noiseless Typewriter Company, Middletown; secretary-treasurer, A. A. Packard, Connecticut Light and Power Company, Middletown.

The Yesterdays have passed along. We don't have to worry about the Tomorrows. They may never come. But we do need to be big for Today. Nobody may ever hear of this secret heroism of ours, but that will not matter. But there may at this moment be hidden a great event of ten or twenty years from now, dependent upon this day — upon being big for this day. — George Matthew Adams.

Open Shop Conference Dinner

The Open Shop Conference of Connecticut will hold its annual dinner at the Hotel Elton, Waterbury, on October 10.

BUSINESS AND THE COLLEGE

(Continued from page 15)

point, rather than indulging in criticism. Too often the college has been indifferent to business, holding itself aloof in a hermit-like superior attitude. The business world has sometimes, through its Mr. Barrons, severely and somewhat unjustly criticised the academic point of view of the college. Criticism only helps if it is based on a sincere understanding of the other group's problems. For instance, the two most significant features of American industry, — uniformity of product and mass production, — are fatal in a college. For effective academic work the group must be small and each man must be trained to be himself, different from his fellows. I believe the college is making a contribution to industry through the training of future leaders, and I am sure that industry can be of help to the college by learning its problems and giving advice rather than criticism.

M.A.C.'s Views on Current News

Our latest good-will ambassador, Amy McPherson, is now doing the Montmartre.

* * *

"Holds Sandwich Reunion". — And all the chickens were there.

* * *

One thing certain, Al Smith is not conducting a whispering campaign. He shouts from the house-top.

* * *

No, Bernice, all this talk about whispering campaign has nothing to do with speak-easies.

* * *

Polly is not going to let Gene get away. She is tracking him down to Italy. We suppose that the ring ceremony will be used.

* * *

"Mother and Daughter Married on Same Day." Figure that out.

* * *

Speak Easy Slogan. — "Not a head in a hogshead."

* * *

Al Smith's western trip may not win him the presidency but he is having a good time.

* * *

Household Hints. — "To remove stains from tablecloth, rub on a little lemon juice."

* * *

The Florida tornado was called "An Act of God." Floridians and Californians always have an alibi.

* * *

And our faith in Hoover is gone. We have just been advised that he does not wear suspenders.

* * *

"Prince Quits Job at Yale to Open Inn." Probably got tired of paying the high prices.

Transportation Department

News of Association Activities and Current Traffic News

Eastern Class Rate Case, Docket 15879

The proposed traffic test ordered by the Interstate Commerce Commission in the Eastern Class Rate Case is being carried out by the rail lines. The only new development in the situation since the acceptance of the traffic test has been the meeting of Trunk Line and New England shippers who have agreed to await the completion of the test. The privilege will then be ceded through briefs to take exception to the Hosmer report or to the result of the traffic test.

Suspension of Rates and Routes via Canadian Lines from and to Points West of the Niagara Frontier

The New England divisions case decision docket No. 756 rendered in 1922 prescribed divisions between New England carriers and certain connecting lines when the movement was entirely within the United States. In the decision, however, the commission did not, apparently through lack of authority, make any recommendation as to divisions on shipments moving from points in the United States through Canada to other points in the United States. The status of the divisions between the carriers operating via the Niagara frontier became so involved that the New Haven road proposed the cancellation of rates via all routes through this frontier.

The Traffic Committee of the Association opposed such cancellation since the result would have been a reduction in the number of routes available to Connecticut manufacturers and an increase in the time necessary for shipments to reach destinations in Michigan, Wisconsin and other states. Representatives of the committee appeared before the New England Freight Association as a result of the granting of a request for hearing. At that hearing the fact was brought out that there was a considerable amount of tonnage moving from the lines west of the Niagara frontier to New Haven Railroad points as well as from points on the New Haven Railroad to Canada and the middle west.

Officials of the Association and members of the Traffic Committee held several conferences with officials of the lines involved, the final one being held between John H. Goss, vice president of the Association and the president of the New York Central Railroad. As a result, the case which was originally in the hands of the legal departments of the carriers was transferred to the presidents of the two principal lines involved.

It is impossible at this date to prophesy the final outcome of the case. The Washington representative of the Association is in constant touch with the Interstate Commerce Commission and a full report will be sent to interested members in due course.

TRAFFIC courses sponsored by the Association last year, will be repeated this year for new groups and in new territory. In addition to the elementary courses, advanced courses will be held in several cities. Members whose employes have not yet signed should observe the opening dates given below and arrange for prompt enrollment.

Each class meets one evening a week for sixteen weeks. The schedule follows:

Waterbury	
Elementary	October 11
Advanced	October 4
New Britain	
Elementary and Advanced	October 18
Hartford	
Elementary and Advanced	October 17
Stamford	
Elementary	October 2
Bridgeport	
Elementary and Advanced	October 10
New Haven	
Elementary and Advanced	October 19
New London	
Elementary	October 17

Consolidated Southwestern Cases

As a result of the petition of the Association for the re-opening of the Consolidated Southwestern Cases, I. C. C. docket No. 14880, etc., hearings were opened on September 17 in New York City. Representatives of over fifty organizations and industrial concerns from cities in the middle west, southwestern and the east-

ern section of the United States were present. The Manufacturers Association of Connecticut was represented by its transportation attorney, J. J. Hickey, and by witnesses, J. F. Atwater, W. F. Price, J. D. Heffernan, P. W. Brown, F. A. Kirk, R. H. Richardson, C. L. Eyanson, A. D. Spang, J. C. Huntting and J. C. Stack. President Hubbard of the Association was in attendance throughout the greater part of the hearing. The transportation department of the Association has been preparing this case for several weeks and it was generally conceded that Connecticut presented a formidable opposition.

It will be recalled that the case originated with the Dallas Chamber of Commerce and was intended at first to include only Texas common points. However when the decision was rendered it was found to have involved practically all of Atlantic seaboard territory and to place at a distinct disadvantage manufacturing industries located in this section of the country.

The examiner who heard the case in the first instance stated in his report that the testimony offered with respect to rail rates from Atlantic seaboard territory was not sufficient to warrant the Commission in making a finding. Nevertheless the Commission on its own initiative handed down on April 25, 1927, a decision in which it disregarded the findings of the examiner and undertook to establish rates from eastern points. The decision further undertook to re-zone New England and in doing so divided the territory into groups, the first group extending to a line drawn seventy-five miles north of Harlem River. This line, under such a distance plan, passed through New Haven, Connecticut, all Connecticut points south of this line taking the New York rate basis while all north of that line took a higher basis.

The Commission's order further had the effect of removing the publication of ocean and rail rates from the ocean and rail lines and placing this authority in the hands of the rail carriers.

The New York hearing was conducted by C. M. Bardwell, examiner for the Interstate Commerce Commission, and W. B. Hardie, director of the bureau of traffic of the Commission. The hearing will be continued at Galveston, Texas, beginning October 8 and the Association will be represented by counsel and witnesses.

Sub-Block American Express Rates

It has been the contention of the Association that the American Railway Express Company, in making up its rates, failed to comply in all instances with the plan of rate making outlined by the Commission in the sub-block case. A study of the tariff disclosed the fact that there are a great many over-charges, running in some cases as high as 25¢ a hundred. The matter is now before the Interstate Commerce Commission under informal procedure and is receiving consideration by a special committee of the Commission's staff.

New England Tidewater Coal Rates

On October 1 the Association's transportation counsel, J. J. Hickey, and witnesses from the Coal Committee and the Traffic Committee of the Association appeared before the Interstate Commerce Commission in Boston in connection with the attempt to reduce rates on coal from ports to the interior, in the case known as I & S docket No. 3112 and docket No. 21075 and 21075-sub 1.

This is one of the major cases brought up jointly by the State of Connecticut and the Association in the program for the reduction of Connecticut's fuel costs.

Clearance Charges, Port of Entry, Shipments from Canada to the United States

Customs rulings and regulations on return merchandise to the United States must be carefully carried out in order to escape penalty of duty. The shipper must be proven to be the original consignee and the consignee must be proven to be the original shipper. A special form, yellow in color, must be properly filled out and signed by the United States consul. This form must be used instead of the regular consular invoice as would be the case in a direct import shipment.

Express Classification Docket No. 10

The American Railway Express Company has published its Classification Docket No. 10, proposing certain classification changes to become effective on or about November 1, 1928. This docket covers changes in rules relating to storage charges, C. O. D. shipments, diversion and reconsignment, refrigeration, advance charges, etc. Those who desire information may communicate with the traffic department of the Association.

American Railway Express to be Taken Over by the Railroad Carriers

The Association is investigating the possible effect of this change upon members using the express service. A report will be made later.

Sales Exchange

In this department members may list without charge any new or used equipment or supplies. All copy must be in the hands of the editor by the fifteenth day of the month preceding publication.

FOR SALE

Hogsheads

Approximately 100 wooden hogsheads, 31″ in diameter x 34″ deep, new and complete.

Address S. E. 186.

Leather Belting

Quantity of wide leather belting, 2 and 3 ply, in good condition.

Water Wheel Governor

1 Holyoke water wheel governor No. 157. Capacity 20,000 foot lbs.

Address S. E. 184.

WANTED TO BUY

Bliss Presses

Three straight sided double crank Bliss presses as follows:

1 No. 3, 3″ crank shaft, opening in die bed approximately 18″ x 31½″, weight of fly wheel 600 lbs.

1 No. 3½, 3½″ crank shaft, opening in die bed approximately 14″ x 30″, weight of fly wheel 900 lbs.

1 No. 3A or No. 4, 4″ crank shaft, opening in die bed approximately 24″ x 35½″, weight of fly wheel 1,100 lbs.

Address S. E. 185.

FACTORY SPACE

23. FOR SALE. Factory at Plainville. Main factory building of three story modern brick construction containing 23,000 sq. ft. Modern brick storage building, modern frame storage building. Two acres of land, water power, and high tension power hook-up. Photographs in this office.

24. FOR RENT. In Hartford 26,000 sq. ft. of manufacturing and storage space on 3 floors of a brick building 210′ x 30′. Sprinklered. Railroad switch nearby. Freight elevator with capacity of 4,000 lbs.

28. FOR RENT. In Meriden, about 50,000 sq. ft. of exceptionally good factory space located in various buildings. Heavy mill construction, good light all around, thoroughly equipped with heat and toilet facilities. Diagram of layout of buildings available at this office.

34. FOR SALE. In Milford, factory building 20,000 sq. ft., 3½ stories, freight elevator, automatic sprinklers, 100 H. P. Bigelow boiler, 30 H. P. steam engine, good light, on lot 133 x 237, adjoining freight siding.

35. WANTED. By small industry, about 10,000 to 20,000 feet factory space in western end of Fairfield County.

Employment Service

This department is open to members free of charge. All copy must be in the hands of the editor by the fifteenth day of the month preceding publication.

SALES MANAGER — Age 33. Married. University education. Six years' experience in factory production. More recently sales manager covering all lines of merchandise involving market surveys and installation of distributors. Familiar with all elements of merchandising. Address P. W. 341.

ACCOUNTANT — Age 29. Married. University training in accounting, marketing and office management. For last six years has held position of supervising accounting of 20 branch houses. Address P. W. 342.

ACCOUNTANT OR OFFICE MANAGER — Age 36. Married. Experience includes ten years as senior accountant in public accounting profession. Prefers position with private corporation. Address P. W. 343.

INDUSTRIAL AND PRODUCTION ENGINEER — Age 34. Married. University graduate. Experienced in industrial engineering, research, plant investigation, sales, reducing costs, improving plant control system. Address P. W. 344.

FINANCIAL EXECUTIVE. Several years' manufacturing experience from bookkeeper to manager. Desires position as manager or departmental manager, especially interested in production work. Will also sell for reputable concern with good product. Address P. W. 311.

EXECUTIVE — With engineering, manufacturing and merchandising, and many years' railroad experience, is desirous of connecting with manufacturing concern. More recently in private business, dealing with Connecticut industries. Address P. W. 335.

SALES EXECUTIVE — Age 30. Married. College graduate. Experience includes sales promotional work, district and sales managership; also laying out sales campaigns, co-ordinating sales to national and direct-by-mail advertising. Address P. W. 338.

ASSISTANT GENERAL MANAGER — College graduate. Eight years' experience in shoe manufacturing in all office positions leading up to general manager of plant. Will consider position as office or production manager, cost man or purchasing agent. Address P. W. 340.

WANTED — Experienced pressed metal man capable of taking charge of plant manufacturing a line of large and small pressed metal parts. Must be experienced on design and upkeep of pressed metal dies and must have ability to direct production and lower costs. Location New England. State age, experience, references and salary. Address P. W. 345.

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